



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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| Name(s) Amy Franco; Jessica Mira | Project Number J1016 |
| Project Title How Does Seasonal Change Affect Respiration Parameters for Oncorhynchus mykiss Living in Shallow Urban Lakes? | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of our investigation was to determine how seasonal temperature changes affect respiration parameters (temperature, dissolved oxygen, and turbidity) for <i>Oncorhynchus mykiss</i> living in Macarthur Park and Echo Park Lakes, which are shallow, cement-lined lakes. We predicted that regardless of the season (Summer, Fall, and Winter) conditions in Echo and Macarthur Park lakes would not support healthy respiration in Rainbow Trout due to high water temperatures and high nutrient levels, which lead to high turbidity and low or even hypoxic oxygen levels.</p> <p>Methods/Materials We conducted a nine-month (July 2006-March 2007) transect study of the lakes. Every three weeks we would paddle down the center of the lakes and stop at four different testing stations. We used a water sampler to collect water at every 1 meter of depth of the water column. We then tested for dissolved oxygen with a dissolved oxygen probe. We also used a thermocline sensor to test for temperature at every .5 meters of depth of the water column. After testing for temperature we lowered a secchi disk to measure water clarity.</p> <p>Results Throughout our investigation, we found high water temperatures that at times were twice as high as trout hatchery standards, as well as consistently eutrophic nutrient levels and dissolved oxygen levels ranging from stressful to hypoxic.</p> <p>Conclusions/Discussion Our results support our hypothesis because during each season (Summer, Fall, Winter), we found potentially stressful and sometimes fatal conditions for trout. The lakes are so shallow that there is often no comfortable water temperature for the fish to live in, and warmer water carries less oxygen. Also biochemical oxygen demand and chemical oxygen demand reduce oxygen levels in the water, probably due to large amounts of bird waste and dead plant and animal matter. Finally, aeration pumps are not being used consistently. The next step in our study would be to continue testing these respiration parameters through Spring. A solution to this problem is that Rainbow Trout should not be stocked in these shallow urban lakes. Also, more aeration pumps should be installed for the water to be sufficiently replenished with oxygen.</p> | |
| Summary Statement We examined the affect of seasonal temperature change on water temperature, dissolved oxygen and water clarity in two shallow urban lakes where Rainbow Trout are stocked. | |
| Help Received Our science teacher helped us get the materials we needed and helped edit our report. Our parents drove us to the lakes and paid for the paddle boats. | |